THIS OPINION WAS NOT WRITTEN FOR PUBLICATION

The opinion in support of the decision being entered today (1) was not written for publication in a law journal and (2) is not binding precedent of the Board.

Paper No. 78

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES

Ex parte KUNIO TAKANOHASHI, MITSUTAKA TANAKA
and TORU YAMANO

Appeal No. 95-0334
Application 08/002,513[1]

HEARD: February 6, 1998

Before KIMLIN, JOHN D. SMITH and CAROFF, Administrative Patent Judges.

KIMLIN, Administrative Patent Judge.

DECISION ON APPEAL

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[1] Application for patent filed January 8, 1993. According to appellants, this application is a continuation of Application 07/866,092, filed April 6, 1992; which is a continuation of Application 07/723,653, filed June 26, 1991; which is a continuation of Application 07/204,527, filed June 8, 1988; all abandoned.

This is an appeal from the final rejection of claims 1 and 3-6, all the claims remaining in the present application. Claim 1 is illustrative:

1. A method of preparing L-ascorbic acid, which comprises allowing an acid to act on 2-keto-L-gulonic acid in a mixed solvent consisting essentially of an inert organic solvent and an aliphatic ketone in the presence of water and a surfactant wherein the volume of the aliphatic ketone in the mixed solvent is in a range of 0.02 to 0.3 relative to the volume of the inert organic solvent, and wherein the amount of water is 1.5 to 3.5 times as much in molar ratio relative to 2-keto-L-gulonic acid, and the amount of the acid is 0.5 to 2 times as much in molar ratio relative to 2-keto-L-gulonic acid.

The examiner relies upon the following references as evidence of obviousness:

Bassford, Jr. et al. (Bassford)	2,462,251	Feb. 22, 1949
Tanaka et al. (Japanese '217) (Japanese Patent Publication)	43-009217	Apr. 16, 1968
Fujiwara et al. (Fujiwara) (Japanese Patent Application)	48-15931	May 28, 1973

Appellants' claimed invention is directed to a method of preparing L-ascorbic acid. The method entails reacting acid with 2-keto-L-gulonic acid (GA) in a reaction medium consisting essentially of an inert organic solvent, water, a surfactant and an aliphatic ketone, such as acetone. According to appellants, the presence of an aliphatic ketone in the reaction medium allows for L-ascorbic acid to be made

in yields comparable to prior art methods wherein diacetone-2-keto-L-gulonic acid (DAGA) is used as the starting material.

Appealed claims 1 and 3-6 stand rejected under 35 U.S.C. § 103 as being unpatentable over Fujiwara in view of Bassford and Japanese '217.

Upon thorough review of the opposing arguments presented by appellants and the examiner, we concur with appellants that the examiner has failed to establish a prima facie case of obviousness for the claimed subject matter. Accordingly, we will not sustain the examiner's rejection.

The examiner recognizes that Fujiwara discloses making L-ascorbic acid from either DAGA or GA, but without an aliphatic ketone being present in the starting reaction medium. To remedy this deficiency in Fujiwara, the examiner relies upon the disclosures of Bassford and Japanese '217. Bassford teaches that when L-ascorbic acid is prepared from DAGA, a ketone, such as acetone, is liberated and dissolves in the solvent layer, thereby facilitating its removal from the reaction medium. Japanese '217 incorporates acetone in a reaction medium comprising DAGA to dissolve intermediate ester compounds. Based on the disclosures of Bassford and Japanese '217, the examiner concludes that it would have been obvious

for one of ordinary skill in the art to add acetone to the reaction medium of Fujiwara.

We agree with appellants that neither Bassford nor Japanese '217 would have provided the requisite motivation to add an aliphatic ketone, such as acetone, in the claimed process of using GA as the starting material for making L-ascorbic acid. Like appellants, we find that Bassford provides a "teaching away" for doing so. Bassford teaches that the solvent forms a separate layer above the reaction medium, and it is into such solvent layer that the ketone is dissolved upon formation in the reaction medium. Since Bassford teaches that the dissolution of the ketone in the solvent layer facilitates its removal from the reaction medium, we concur with appellants that the teaching of Bassford would not have motivated one of ordinary skill in the art to add such a component, acetone, to the reaction medium.

Concerning Japanese '217, this reference is directed to the use of DAGA, not appellants' GA, as the starting material for preparing L-ascorbic acid. While Japanese '217 adds acetone to the reaction medium for dissolving intermediate ester compounds formed by the reaction of DAGA and acid, the examiner has not established on this record that similar ester

intermediates are formed during appellants' reaction of GA and acid. In the absence of any teaching or suggestion in the prior art that similar, intermediate ester compounds are formed during the reaction of GA and acid, there would have been no motivation for one of ordinary skill in the art to incorporate acetone in the reaction medium. Furthermore, as argued by appellants, Japanese '217 adds a C_6-C_{10} aliphatic alcohol or C_5-C_6 alicyclic alcohol to the reaction medium, and the present claim language "consisting essentially of" precludes the presence of such alcohols in the claimed reaction medium. We note that the examiner has not rebutted appellants' argument pertaining to the "consisting essentially of" language.

In our view, the examiner's underlying rationale for the conclusion of obviousness is more an explanation, with the benefit of appellants' specification disclosure, why appellants' process achieves an improved yield of L-ascorbic acid, than why it would have been obvious for one of ordinary skill in the art to employ an aliphatic ketone in the starting reaction medium of the claimed process. Manifestly, this approach necessitates the use of impermissible hindsight.

In conclusion, based on the foregoing, the examiner's decision rejecting the appealed claims is reversed.

REVERSED

MARC L. CAROFF Administrative Patent Judge	)	
EDWARD C. KIMLIN Administrative Patent Judge	)	BOARD OF PATENT APPEALS AND INTERFERENCES
JOHN D. SMITH Administrative Patent Judge	)	

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